



## PUBLIC PAGE

### QUARTERLY REPORT Project WP#339: Structural Significance of Mechanical Damage

*For Period Ending:* August 31, 2011

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Pipeline and Hazardous Materials Safety Administration  
Office of Pipeline Safety

<i>Prepared By:</i>	Aaron Dinovitzer Principal Investigator BMT Fleet Technology Limited 311 Legget Drive Kanata, Ontario, Canada K2K 1Z8 613 - 592 - 2830 ext 203 <a href="mailto:adinovitzer@fleetch.com">adinovitzer@fleetch.com</a>	Murès Zaréa, Rémi Batisse Principal Investigators GDF SUEZ, R&I Department 361 Ave du President Wilson B.P. 33, 93211 Saint-Denis, France +3-366-413-5637 <a href="mailto:mures.zarea@gdfsuez.com">mures.zarea@gdfsuez.com</a> <a href="mailto:remi.batisse@gdfsuez.com">remi.batisse@gdfsuez.com</a>
	Mr. Ian Wood Team Project Manager Electricore, Inc. 27943 Smyth Drive, Suite 105 Valencia, CA 91355 <a href="mailto:ian@electricore.org">ian@electricore.org</a>	Mark Piazza Team Technical Coordinator Pipeline Research Council, Intl. 3141 Fairview Park Drive, Ste 525 Falls Church, VA 22042 <a href="mailto:mpiazza@prci.org">mpiazza@prci.org</a>



## Public Page for Quarter Ending November 30, 2010

### Project WP#339: Structural Significance of Mechanical Damage

#### **Background**

The primary objective of the project is to establish a detailed experimental database to support the development and validation of improved burst and fatigue strength models for assessing the interaction of mechanical damage with secondary features (gouges, corrosion, and welds). The data will be used to develop and validate mechanistic models which will produce reliable tools to assess a wide range of mechanical damage forms. These data are needed to support the efforts of PHMSA and the pipeline industry to ensure safe operation of pipeline systems and to promote continuous improvements and focus on public safety, and support the improvement of pipeline standards and codes of practice.

#### **Progress in the Quarter**

A summary of the results are:

- Task 2—The Project Team has selected vintage pipe materials for full-scale testing of dent+gouge features and has communicated the selection to PHMSA;
- Task 4—The team has approved the second batch of Pipe 3 plain dent specimens has and testing has commenced. The team estimates that they will complete the testing during the next quarter.
- Task 5—The researchers performed metallurgical investigation on a defect created by slower dynamic aggression with a worn tooth at lower pressure and did not observe any hard layer microstructures nor the presence of micro-cracks near the gouge surface. This is a significant difference with respect to defects created by dynamic aggression with a sharp tooth at high pressure, resulting in hardened layers and micro-cracks at the gouge surface.

#### **Technical Issues, Problems or Challenges**

None

#### **Plans for Future Activity**

##### **Task 2: Purchase & Characterize Pipe Material**

The team will begin creating dent+gouge features in the selected vintage pipe and start full-scale testing and material property testing.

Task 4: Testing of Dents on Welds and Corrosion Features

BMT will finish the testing of the second batch of Pipe 3 plain dents specimens in the coming quarter. They will deliver a report documenting the results w to the project team and will present the results in the next quarterly report.

Task 5: Testing of Dents with Gouges

GDF SUEZ will continue the destructive characterization of defects just after creation, conditioned by the progress of neutron diffraction analysis, and will launch full material characterization and dent+gouge tests of vintage pipe.